South African Medical Journal

Organ of the Medical Association of South Africa

S.-A. Tydskrif vir Geneeskunde

Vakblad van die Mediese Vereniging van Suid-Afrika

Incorporating the *South African Medical Record* and the *Medical Journal of South Africa*

REGISTERED AT THE GENERAL POST OFFICE AS A NEWSPAPER

Vol. 26, No. 38 | Cape Town, 20 September 1952 | Weekly 2s 6d

IN THIS ISSUE

South African Medical Journal
Suid-Afrikaanse Tydskrif vir Geneeskunde
P.O. Box 643, Cape Town Posbus 643, Kaapstad

Vol. 26, No. 38 Cape Town, 20 September 1952 Weekly 2s 6d

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SURGICAL TREATMENT OF THE SINUS

BY THE EXTERNAL ROUTE

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A study of the surgical treatment of chronic frontal sinusitis shows two fundamental and divergent points of view, one directed to the obliteration of the sinus and the other to its conservation with improved intranasal drainage. The earliest forms of surgery were reserved for the cure of necrosis of the walls and of fistulas.

However, Runge [1] conceived the idea of obliterating the sinus cavity by opening or removing the anterior wall and treating the tissues with a caustic ointment of nitrate of silver, in an endeavour to unite the soft tissues and mucous membrane lining the bone. Thus was initiated the idea of the elimination of the sinus cavity. Most surgeons, however, have devoted themselves to the establishment of an efficient and permanent communication between the sinus and the nose.

This paper is based on the conception of the obliteration of the sinus and the closing of the fronto-nasal duct. This concept is shared with Woods [2] who writes: 'Teaching has made us all believe that to succeed in frontal sinus operations, a patent frontal duct must be maintained. I suggest that this teaching is quite wrong. For success in this operation the frontal duct must be closed.'

In general, surgical treatment by the external route is indicated in the following cases:

1. Simple or complicated infections in which medical or surgical treatment has failed to cure or improve the patient's condition.
   Simple cases can be divided into those showing:
   i. Insufficient natural drainage.
   ii. Irreversible changes in the mucous membrane.
   iii. Pyocele.
   Complicated cases may be divided into those of:
   i. Intracranial complications.
   ii. Cranial, osteomyelitis of the vault.
   iii. Orbital.
   iv. General.
2. Mucocele.
3. Osteomas and other rare tumours or pseudotumoral granulomas.
4. Sinus troubles due to irreversible allergic conditions which block the fronto-ethmoidal infundibulum, provoking pain which does not cede to ordinary medical treatment.
5. As a means of intracranial access to the roof of the ethmoid and the cribriform plate (olfactory fossa) in cases of fissure of the ethmoid with a resultant cranial hydrorrhea.
6. Pneumocranium of frontal sinus origin.
7. Trauma of the frontal sinus.

Speaking in general terms of the infections of the frontal sinus (which form the majority of the surgical cases), the following procedures may be cited as classical.

1. Ethmoidectomy with removal of the fronto-ethmoidal wall.
2. Opening of the frontal sinus by resection of the
   (a) Inferior wall (Jansen-Ritter [3]);
   (b) Partial removal of the inferior wall (Uffenorde-Seiffert-Lynch [4]);
   (c) Partial removal of the frontal wall (Ogston [5]);
   (d) Entire removal of the anterior wall (Kuhnt [6]);
   (e) Total removal of the inferior wall and part of the anterior (Killian-Taptas, etc.[7]);
   (f) Total removal of the inferior wall and partial of the anterior, but respecting the integrity of the ostium of the frontal sinus (Walsh);
   (g) Total removal of the anterior and inferior walls (Riedel [8]);
   (h) Removal of anterior and posterior walls of the frontal sinus leaving the inferior wall and the fronto-nasal duct or else packing the latter with gelatin sponge soaked in fibrin. Opening of the anterior ethmoidal cells or exceptionally the posterior. The sinus is packed post-operatively with gauze to encourage granulations from the dura and bone to bring about gradual obliteration of the cavity (Mosher [9]);
   (i) Woods [10] of Dublin takes away the inferior wall of the frontal sinus and meticulously removes the mucous membrane of the cavity and of the fronto-nasal duct and achieves eventual obliteration of the sinus and duct;
   (j) Finally we come to the osteo-plastic technique or temporary opening of the anterior wall which was first practised in 1894 by Brieger and Schönborn,[11] modified by Bergara and more recently by Tato of Buenos Aires.

All other procedures represent modifications of the foregoing list. In the United States the Lynch operation and in England the Howarth operation have many followers.

Treatment through the surgical opening of the mucous membrane of the sinus:
   (a) Total extirpation.
   (b) Partial extirpation.
   (c) Conservation of the mucous membrane.
3. Establishment of a permanent fronto-ethmo-nasal communication by:
   (a) Simple enlargement.
   (b) Flaps using nasal mucous membrane.
   (c) Free grafts of skin.
   (d) Tubes (rubber, Acrylic or Tantalum).

In spite of powerful antibiotics, a meticulous care is required in the post-operative treatment as the cavity easily becomes infected as the duct becomes narrowed. In association with Bergaglio, Tato has evolved from the

past the re-birth of an old technique which consists in the occlusion of the sinus cavity with fat.

Riedel tried a technique with the same object, but the bad aesthetic results relegated the operation to those servere cases with complications; finally, the intervention was not always successful.

Hajek tried to obliterate the cavity by granulation tissue formation as Mosher recommends. Deformities and occasional failures followed Hajek's operation.

Tato has used the insertion of various materials into the sinus with good results and his method is the following:

1. *Opening*: (a) Total removal of the inferior wall of the frontal sinus when the sinus is not high although it may be broad and deep. If it is high, temporary resection of the anterior wall by formation of an osteo-plastic flap is the procedure of choice. In cases of bilateral sinusitis, both sinuses may be dealt with from one side; however, in such cases we do a total removal of the inferior wall and the antero-internal portion of the anterior wall below the esthetic eminence.

(b) Complete and meticulous removal of the mucous membrane of the sinus respecting that of the infundibulum.

2. *Closure of the Communication with the Nose.* This is done by separating the mucous membrane from the canal wall sufficiently to form a cuff which is then inverted downwards. In case of doubt about closure, a piece of fascia lata or a flap of periosteum from the neighbouring bone may be inserted with fat placed above it. If the fatty tissue has some aponeurosis attached to it, this latter may be introduced into the infundibulum and suffices to close the opening without anything further being done.

3. *We do not practise ethmoidectomy* unless it is necessary and in such case *we always respect the integrity of the fronto-ethmoidal wall* which should remain intact.

At this point we may consider the question of the removal of the ethmoid. Woods[12] states in the description of his technique that on the whole a wide removal of the ethmoid is not usually practised; but if any ethmoidal cells are opened, the floor is preserved, so as to avoid making a large opening into the nose, which later would be difficult to close. He adds that his experience does not support the statement that the ethmoid is the key to the frontal sinus.

In this attitude, he has the approval of Mosher[13] who states that in cases of osteomyelitis of the frontal bone and sinus, he often left the infected ethmoidal cells for a further operation and later found this was not necessary. It would appear that that surgeons have been putting the cart before the horse and the logical deduction to be drawn is that the frontal sinus infects the ethmoidal cells, which is contrary to the convictions of many of us.

In the presence of mixed pansinusitis (allergy plus infection) characterized by a polypoid degeneration of the ethmoid and maxillary sinuses and to a lesser degree in the sphenoidal and rarer still in the frontal, Tato has found that the Ermiro de Lima technique (transmaxillary ethmoido-sphenoidectomy)[14] gives satisfactory results in the great majority of cases.

Fig. 1. *Fig. 2.* *Fig. 3.*

Fig. 4.

4. Now comes the original note in the operation, the filling of the cavity with fat or other material. When the osteo-periosteal technique is necessary, in large and high sinuses, the procedure Tato outlines is as follows:

(a) *Radiography* of the sinus is made with the addition of a wire grille with squares of 1 cm. which is applied to the frontal bone (Fig. 1) and the head is placed in the fronto-nasal position and also in profile. This enables one to establish beforehand the dimensions of the frontal sinus with a view to future surgery.

(b) *Anaesthesia.* Local with pre-anaesthesia and exceptionally, a general anaesthetic.

(c) *Incision of the skin and subcutaneous tissue* following the inferior margin of the eyebrow as generally practised, but extending somewhat more laterally (Fig. 2). The periosteum is not incised. It must be preserved untouched.

(d) Separation of the skin and subcutaneous tissue upwards and exposure of the area corresponding to the anterior wall of the sinus with its adherent periosteum and then extending somewhat beyond its limits (Fig. 3).

(e) The periosteum is incised in accordance with the contour of the sinus by studying the grille radiograph with its centimetre squares. By these means a strip of bare bone of 5 mm. width is traced and forms the guide for the future use of the special burr.

(f) To enter the sinus one must take note of the classical landmark, the nasal process of the frontal bone and perforate it immediately above the lachrymal portion of the unguis. We use a common perforating burr to make the initial step (Fig. 4).

(g) The most useful burr is one specially designed by Tato for frontal sinus work. It has 3 cutting edges and a smooth spherical head, which avoids a possible perforation of the posterior wall of the sinus and is known as a reamer. Continuous lavage with normal saline and suction is used during this stage of the operation. The burr is inclined obliquely, so as to obtain a bevelled edge. Starting from the initial perforation of the reamer, one follows the contour of the sinus, which has previously been established by accurate measurements from the grille radiograph and subsequently traced. The course of the reamer is in and up, and out and down.

(h) With a chisel as a lever, the osteoplastic flap is turned downwards by fracturing the bone just below the supraciliary ridge, the periosteum being left intact. In this way an excellent view of the interior of the sinus is obtained (Figs. 5–8).

(i) The mucous membrane of the frontal sinus and that of the interfrontal septum is removed with meticulous care. We use for this purpose a Freers septal elevator and in addition a spherical cutting burr of appropriate diamenter which is very efficient in narrow hidden recesses. The burr is the best curette. We also eliminate all the intra-frontal septa, smoothing them down.

(j) The mucous membrane of the infundibulum is separated from the contour of the duct, invaginated, and pushed downwards to secure permanent closure of the duct.

If any doubt exists about a perfect occlusion, a piece of fascia lata attached to the fat is inserted into the opening and left there or a flap of periosteum from the neighbouring bone is inserted as Bergaglio and Alba have done.

(k) The cavity is filled with fatty tissues taken from the abdomen or thigh and, if possible, with the corresponding fibrous tissue sheath attached. We take enough for our purpose. Actually we are now using fibrin sponge, gelatine sponge, coagulated blood, desiccated serum and plasma, with similar results.

(l) The osteoperiosteal flap is re-applied and fixed with interrupted sutures.

(m) Closure of the skin and the subcutaneous tissue is done separately with interrupted sutures.

Fig. 5.

Fig. 6.

Fig. 7.

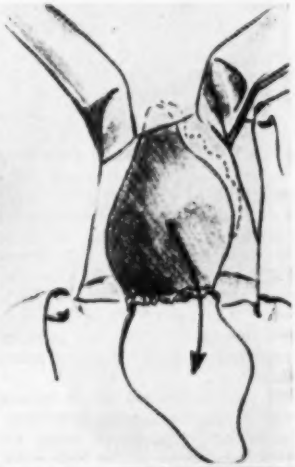

Fig. 8.

(n) Application of an elastic bandage to exert a certain degree of pressure. In the cases we have practised with this technique the results show healing by first intention. This technique has been employed by Ermiro de Lima and Moura of Rio de Janeiro, Bergara, Altavista, Sibbald, Haedo, Hidalgo,

Romero Diaz, and others with good results. Tieffemberg prefers inserting bone chips in the cavity. We have operated 38 cases up to date.

Complications. In one of the cases, a tumefaction of moderate degree formed in the supero-internal region of the upper lid which persisted for 2 weeks and was found to be due to an excess of material placed inside the sinus. It disappeared progressively at the end of a year.

We have followed radiographically various cases and have proved the partial or almost total transformation of the bone of the cavity of the sinus, as also a re-pneumatization of limited extent.

ANALYSIS

Recently we have noted that Woods [2] has carried out a similar operation during the past 20 years. The technique differs in certain details from Tato's. Woods removes the floor of the sinus in all cases. Before taking away any part of the bone with a forceps he carefully separates off the mucous membrane so that the two are not included in the same bite. This is done to avoid the risk of osteomyelitis.

He removes the mucous membrane of the naso-frontal duct with a successive series of gauze strips. These are pulled down from the sinus through the nose. By gradually increasing their bulk, all the mucous membrane is finally removed, but requiring the use of some force at the end. The use of the curette is forbidden absolutely because he believes that an infected curette scratching the endosteal surface is another potential cause of osteomyelitis.

Both Tato and Woods stress the complete and absolute removal of all the mucous membrane.

The Woods technique is made more difficult by the incomplete exposure of the high sinus, and it is a tribute to his care and patience that, working at times blindly, and at others with the help of post-rhinal mirrors, he has been successful in removing every vestige of the mucous membrane and has never left a particle behind to form a cyst or a pocket, and so defeat the object of the operation. He has had no case of osteomyelitis.

The exposure of the sinus by the osteoplastic method offers a positive advantage in the discovery of 'hide-outs' of mucous membrane. Tato feels that the main difference between the 2 techniques is the insertion of the fat gelatine sponge, fibrin sponge, etc., to the limit of the capacity of the sinus.

A 'dead space' with limited drainage is thus avoided, and if, in addition, the inserted material favours the organization of fibrous tissue by absorbing and holding blood clot, a further claim to its use can be advanced.

Post-operative chemotherapy is observed in both procedures. Woods and Tato accept the inevitable formation of pus in the cavity after the operation, but apparently the cure of the suppuration occurs before the closure of the duct.

SUMMARY

1. The occlusion of the frontal sinus cavity with such materials as fat or others is described.

2. The osteo-periosteal flap technique is used in this operation, with an improvement over other similar practices.

3. The treatment of the other sinus through the intersinal septum can be done without any difficulty.

4. In cases of fracture or fissure of the cribriform plate (ethmoidal fissure or fracture) with cranial hydrorrhea, we are of opinion that this operation offers the simplest means of approach for surgical treatment to this area and it is easier and less dangerous than the intracranial route used by neuro-surgeons.

I wish to thank Professor Tato for the inspiration of this paper and the help he generously proffers to the staff of his service.

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13. Mosher (1950): Quoted in (9).

ABSTRACTS

Crystalline Anti-pernicious-anaemia Factor in Treatment of Two cases of Tropical Macrocytic Anaemia. J. C. Patel (1948): Brit. Med. J., **2**, 934.

Two cases of tropical macrocytic anaemia responded well to treatment with 80 micrograms anti-anaemia factor.

Vitamin B_{12} in Pernicious Anaemia and Puerperal Macrocytic Anaemia. F. H. Bethell, M. C. Meyers and R. B. Neligh (1948): J. Lab. Clin. Med., **33**, 1477.

Three patients responded to 1 microgram of Vitamin B_{12} per day. Another patient given Aminopterin (folic acid antagonist) prior to B_{12} administration responded only slowly but when Aminopterin was discontinued a second reticulocyte response occurred. A case of puerperal macrocytic anaemia responded to folic acid but not to B_{12}. The daily output of B_{12} by patients with untreated pernicious anaemia appears to be many times greater than that necessary for remission and suggests that there is defective absorption of B_{12}.

Activity of Microbial Animal Protein Factor Concentrates in Pernicious Anaemia. E. L. R. Stokstad, A. Page, J. Pierce, A. L. Franklin, T. H. Jukes, R. W. Heinle, M. Epstein and A. D. Welch (1948): J. Lab. Clin. Med., **33**, 860.

Concentrates of microbiologically produced material, highly active as a source of the animal protein factor, as measured by assay with chicks, were shown to be effective, when given parenterally, in producing a haematopoietic response in cases of pernicious anaemia.

South African Medical Journal
Suid-Afrikaanse Tydskrif vir Geneeskunde

VAN DIE REDAKSIE

DIE NEIGING VAN SKARLAKENKOORS IN DIE AFGELOPE JARE

'n Kort oorsig oor die voorkoms van skarlakenkoors in die jare na die tweede wêreldoorlog is in die *Epidemiological and Vital Statistics Report*[1] geplaas. Dit toon dat Europa, benewens die suidelike en suidwestelike streke, nog voorkom as die vasteland waar die syfer die hoogste is. Terwyl skarlakenkoors sedert die begin van die eeu baie minder gevaarlik geword het, het dit in baie lande, in die afgelope jare 'n baie groter aantal mense aangeval as in die tydperk tussen die twee wêreldoorloë, veral in Europa.

In groot dele van Afrika en Asië waarvoor gegewens beskikbaar is, was die aantal gevalle van skarlakenkoors, wat gedurende die na-oorlogse jare aangegee is, betreklik gering. Dit was ook die geval in Amerika, behalwe in Kanada, en, selfs nog meer, in die V.S.A. Nogtans, is die voorkoms in laasgenoemde twee lande, in verhouding tot dié in baie Europese lande, nog betreklik klein.

Terwyl die jaarlikse getal gevalle wat in die V.S.A. aangegee is van 1946 tot 1949 verminder het van 116,000 tot 75,000 en daarna tot 57,000, het dit oor die Europese vasteland as geheel vermeerder van 239,000 tot 420,000 en daarna tot ongeveer 520,000. Nog 'n voorbeeld van hierdie vergelykende neiging is die aantal gevalle per 100,000 inwoners wat aangeteken is: van 1946 tot 1949 het die jaarlikse getal gevalle wat in Kanada en die V.S.A. aangegee is, nie 76 en 83 per 100,000 inwoners oorskry nie; in Europa, aan die ander kant, was syfers bo 100 per 100,000 inwoners in 10 lande in 1946, in 9 in 1947, in 12 in 1948, en in 15 in 1949 en 1950, aangeteken. Soms was daar meer gevalle in een enkele Europese land as in die hele V.S.A., bv. in 1950 was daar 65,883 gevalle in Engeland en Wallis, en 86,924 in die Federale Republiek van Duitsland, in vergelyking met slegs 56,851 in die V.S.A.

Belangwekkende uitbrake van skarlakenkoors het in die laaste jare in 'n aantal Europese lande voorgekom; in Bulgarye in 1946; in Ierland en Skotland in 1948; in Oostenryk, Tsjeggo-Slowakye, die Federale Republiek van Duitsland, Hongarye, Ysland, Noord Ierland, Poland, Swede en weer in Ierland in 1949; in Berlyn, Finland, Malta, Joego-Slawië, en weer in Oostenryk, die Federale Republiek van Duitsland, Poland, en Swede in 1950; en in Finland en Spanje in 1951.

Dit is interessant dat skarlakenkoors-aangifte (vir alle rasse as geheel) in Suid-Afrika geneig het om te daal. In

1. Epidem. Vital Statist. Rep., 1951, **4**, 355.

EDITORIAL

TREND OF SCARLET FEVER IN RECENT YEARS

A brief study of the incidence of scarlet fever in the years since the second World War has been published in the *Epidemiological and Vital Statistics Report*.[1] It shows that Europe, apart from the southern and south-western regions, still seems to be the continent where the incidence is highest. While scarlet fever has become much less serious since the beginning of the century, in many countries it has attacked a far greater number of people during recent years than in the period between the two world wars, particularly in Europe.

In large sectors of Africa and Asia for which data are available, the number of cases of scarlet fever notified during the post-war years has been relatively insignificant. This has been true also in America, except in Canada and, even more so, in the U.S.A. However, the incidence in these latter two countries is still comparatively small in relation to that in many countries of Europe.

Whereas from 1946 to 1949 the annual number of cases notified in the U.S.A. decreased from 116,000 to 75,000 and then to 57,000, over the European continent as a whole it increased from 239,000 to 420,000, and then to about 520,000. Another illustration of this comparative trend is found in the number of cases recorded per 100,000 inhabitants: from 1946 to 1950, the annual number of cases notified in Canada and the U.S.A. did not exceed 76 and 83 per 100,000 inhabitants; in Europe, on the other hand, rates above 100 per 100,000 inhabitants were recorded in 10 countries in 1946, in 9 in 1947, in 12 in 1948, and in 15 in 1949 and 1950. Sometimes there were more cases in a single European country than in the whole of the U.S.A.; for example, in 1950 there were 65,883 cases in England and Wales and 86,924 in the Federal Republic of Germany, as compared with only 56,851 in the U.S.A.

Significant outbreaks of scarlet fever occurred in a number of countries of Europe in recent years: in Bulgaria in 1946; in Ireland and Scotland in 1948; in Austria, Czechoslovakia, the Federal Republic of Germany, Hungary, Iceland, Northern Ireland, Poland, Sweden, and again in Ireland in 1949; in Berlin, Finland, Malta, Yugoslavia, and again in Austria, the Federal Republic of Germany, Poland, and Sweden in 1950; and in Finland and Spain in 1951.

It is interesting that in South Africa scarlet fever

1. Epidem. Vital Statist. Rep., 1951, **4**, 355.

1946 was die totaal vir Blankes, Naturelle, Asiate, en Kleurlinge 3,255 en die jongste beskikbare syfers vir 1949 toon 2,481.

Die mortaliteit wat deur skarlakenkoors veroorsaak word, het 'n aansienlike daling getoon. In die V.S.A. het die aantal sterfgevalle tussen 1944 en 1948 van 422 tot 68 jaarliks gedaal, wat ooreenstem met 'n gevalle-sterftesyfer van slegs 0.22% en 0.09% onderskeidelik; hierdie syfers is in teenstelling met dié vir 1936, 1937 en 1938 toe daar 2,493, 1,824 en 1,206 sterfgevalle was, d.w.s. 'n gevalle-sterftesyfer van 1.0%, 0.8% en 0.6% onderskeidelik. In Joego-Slawië, waar 'n besondere hoë siektegevalsyfer vir 1950 opgeteken was (18,581 gevalle) was die sterftesyfer laer as ooit tevore: 37 sterfgevalle. Dit is in opvallende teëstelling met die syfer vir 1928, toe daar vir die 23,078 gevalle aangeteken 3,371 sterfgevalle was. Slegs 8 sterfgevalle van skarlakenkoors was in 1950 in Turkye aangeteken, in vergelyking met 400 in 1929 vir ongeveer dieselfde getal gevalle wat aangegee is. Australië verskaf ook 'n voorbeeld van die lae sterftesyfer van skarlakenkoors; van 1943 tot 1948 was die totale aantal sterfgevalle nie meer as 112 vir die 59,098 gevalle wat aangegee is nie.

Sterfgevalle aan skarlakenkoors in die Unie* is moeilik om to ontleed, want sterfgevalle onder Naturelle is nie registreerbaar nie, behalwe met sekere stedelike plaaslike owerhede.† Geen statistieke van sterfgevalle vir nasionale of vergelykende doeleindes is derhalwe beskikbaar nie. Vir wat die gegewens egter werd is, weet ons dat die totale aantal sterfgevalle vir Blankes, Asiate en Kleurlinge (d.w.s. uitsluitende Naturelle) progressief van 1 in 1946 tot 9 in 1949 gestyg het, met 'n merkbare oorwig van sterfgevalle onder vroulikes.

In die ontleding van sorgvuldig opgestelde lewenstatistieke sal ongetwyfeld meer lig op die epidemiologie van hierdie belangrike besmetting gewerp word.

* Ons is dank verskuldig aan die Sekretaris van Gesondheid vir die verskaffing van inligting oor die skarlakenkoors posisie in die Unie.

† Onlangs is dit egter bekendgemaak dat vanaf 1 Julie 1952 die registrasie van geboortes en sterftes van naturelle in plattelandse gebiede (ingeslote die naturellereservate) verpligtend sal wees.

notifications (for all races as a whole) have tended to drop. In 1946 the total for Europeans, Natives, Asiatic and Coloureds was 3,255, and the latest available figures for 1949 showed 2,481.

The mortality caused by scarlet fever has shown a considerable decrease. In the U.S.A., between 1944 and 1948 the number of deaths dropped from 422 to 68 annually, corresponding to a case fatality-rate of only 0.22% and 0.09% respectively; these figures are in contrast with those for 1936, 1937 and 1938, when there were 2,493, 1,824 and 1,206 deaths, i.e. a case fatality-rate of 1.0%, 0.8%, and 0.6%, respectively. In Yugoslavia, where a particularly high morbidity-rate was recorded for 1950 (18,581 cases), mortality reached a rate lower than ever before: 37 deaths. This is in striking contrast with the rate for 1928, when there were 3,371 deaths for the 23,078 cases recorded. Only 8 deaths from scarlet fever were recorded in Turkey in 1950, as compared with 400 in 1929 for an approximately equal number of cases notified. Australia, too, provides an illustration of the low death rate from scarlet fever; from 1943 to 1948, the total number of deaths was not more than 112 for the 59,098 cases notified.

Deaths from scarlet fever in the Union* are difficult to analyse because Native deaths are not registrable except in certain urban local authorities.† No statistics of deaths are therefore available for national or comparative purposes. For what the data are worth, however, we know that the total of deaths for Europeans, Asiatics and Coloureds (i.e. excluding Natives) rose from 1 in 1946 progressively to 9 in 1949, with a marked preponderance of deaths amongst females.

Carefully recorded vital statistics and their analysis will undoubtedly throw much light on the epidemiology of this important infection.

* We are indebted to the Secretary for Health for providing the information about the scarlet fever position in the Union.

† Recently, however, it was announced that from 1 July 1952 the registration of Native births and deaths would be compulsory in rural areas (including the Reserves).

NEUROBLASTOMA

A CASE REPORT

ERIC KREFT, M.B., CH.B.
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'By neuroblastoma is meant a tumour consisting of immature undifferentiated neuroblasts' (Willis). It is a rapidly growing malignant tumour almost invariably found in the adrenal glands or the ganglia of the sympathetic nervous system; about a third of cases occur in the adrenal medulla, another third in the abdominal sympathetic chains, and the rest in the thoracic or cervical sympathetic ganglia and visceral ganglia. The tumour occurs most frequently in early childhood and is almost uniformly fatal within 3 months.

The identity of these tumours was first established by Wright in 1910. Before this they had been considered sarcomatous in origin. Two types are described, viz. those of Pepper and Hutchinson. In the Pepper type, metastases are very early, and to the liver and abdominal lymph glands. In the Hutchinson type, metastases are later, and

are to the skull, dura, ribs, long bones and sometimes to the lungs.

Whereas the neuroblastoma is a highly malignant tumour with undifferentiated cells, it has a relatively benign counterpart in the ganglion-neuroma, with well differentiated cells and a good prognosis. Between these two extremes, innumerable variations exist.

CASE REPORT

An African female of about 10 years was admitted to hospital on 13 July 1951 complaining of a painful left hip, following a fall on her left knee one month before. The pain had been getting progressively worse and was recently associated with slight generalized body malaise, weakness and feverishness. Careful questioning could elicit no other complaints.

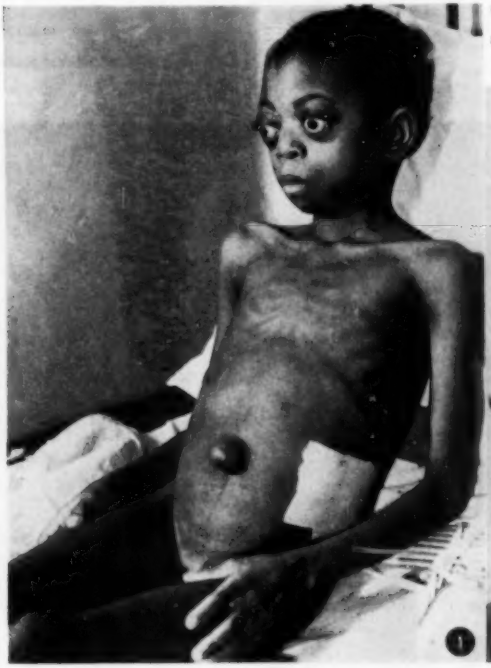
Examination revealed a somewhat wasted African child with slight puffiness around the eyes and pallor of the mucous membranes and palpebral conjunctivae. Temperature 100° F and pulse 110 per minute. Abdominal examination indicated a firm, rubbery, coarsely nodular, fairly well-defined mass the size of a small melon; it was not tender, fixed and extended approximately in the line of the small gut mesentery, from the left subcostal region to about 2 inches below the umbilicus. There was no evidence of splenomegaly, hepatomegaly or any lymphadenopathy. The hip joint was held in slight adduction and semiflexion and any movement was very painful.

Special Investigations.

(a) *20 July 1951*: E.S.R. 91 mm. in 1 hour (Westergren).
Haemoglobin, 7.9 gm. %.
Red cell count, 2.9 million per c.mm.
White cell and differential white cell counts, within normal limits.

(b) Urine contained a trace of albumin only. This was not of the Bence Jones type.

(c) X-ray of both hip joints, pelvis, spines indicated nothing abnormal.



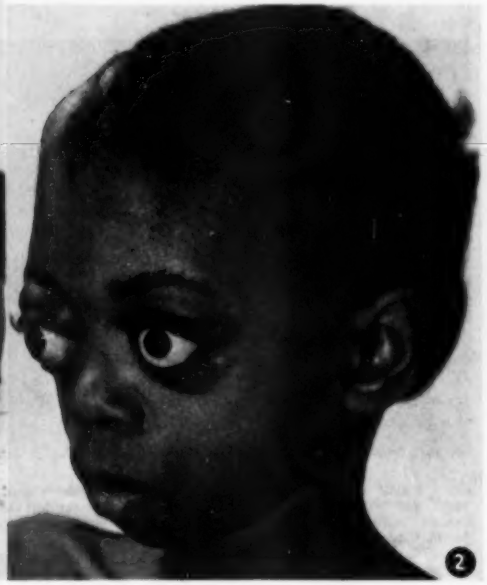


Fig. 1. General picture showing proptosis, generalized wasting and diffuse distension of the abdomen (3 weeks before death).
Fig. 2. Head showing the bony tumour on the right anterior parietal bone, the marked proptosis and, on the inferior right orbit, the subconjunctival haemorrhage.

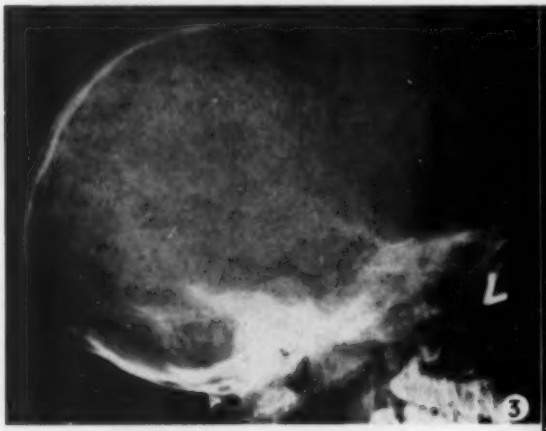
Progress. Her condition remained unchanged for the next 1½ weeks, the temperature being consistently in the region of 100° F. She then developed pain in the right hip joint, the left hip joint improving rapidly. Within the next 2 weeks the pain flitted from the left to right hip joints at 4- to 5-day intervals. Then, 5 weeks after admission, she developed pain in the left elbow joint and was given salicylates, to which there was a dramatic response in both temperature and pain.

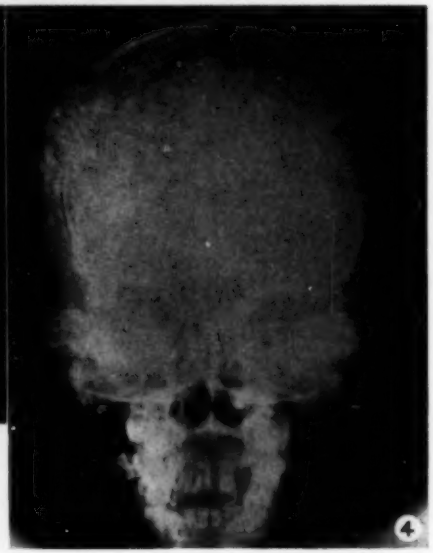
The haematological examination was repeated 4 weeks

after admission, and there was no significant change recorded from the previous findings, except for slight aggravation of the anaemia.

About 5 weeks after admission a small conjunctival haemorrhage was noted in the right lower eyeball and slight proptosis became evident. The circum-ocular oedema seemed to be increasing, and a diffuse, painless, soft, swelling appeared on the anterior right frontal region of the skull. There was rapid progression of these signs (Figs. 1, 2). The X-ray report stated:

'X-ray of the skull on 26 September indicated multiple small osteolytic defects of the bones of the vault, maxilla and mandible, with diastasis of the coronal and, to a lesser degree, the sagittal sutures. Areas of palisade spiculation, particularly of the parietal bones just posterior to the coronal suture, were present. The bones of the orbital margin were thin and poorly defined. Osteoporosis and some osteolytic defects were seen in all other bones X-rayed' (Figs. 3, 4).





Figs. 3 and 4. X-ray views of the skull showing multiple small osteolytic defects with diastasis of the sagittal and coronal sutures and palisade spiculation particularly of the parietal bones just posterior to the coronal suture.

The patient's condition now began to deteriorate rapidly with gross loss of weight, very marked increase in proptosis and increase in size of the abdominal tumour with the presence of free fluid in the peritoneal cavity. The conjunctival haemorrhage increased in size slowly. The temperature remained normal. She was in constant agony and morphine gr. 1/6 every 4 hours was soon necessary to relieve her symptoms. About 10 weeks after admission, further haematological examination showed a slight further aggravation of the anaemia with a white cell count still within normal limits; blood slides showed marked polychromasia, anisocytosis and macrocytosis with a very occasional metamyelocyte and normoblast (presumably a leuco-erythroblastic response of the bone marrow to metastatic invasion). Despite her very poor condition, she lived a further 3 weeks, and died on 22 October, about 3 months after admission.

AUTOPSY

Abdomen. A large tumour of the para-aortic lymph nodes (Fig. 5) measuring 13 x 8 x 7 cm. The cut surface was mottled red and fawn yellow with yellow gritty points. Both adrenal glands appeared normal, but the left adrenal gland was adherent to the upper pole of the mass. Several lymph nodes of the iliac and inguinal group were enlarged but discrete; they were similar to the large mass although many had black pigmented areas at their poles. No supradiaphragmatic nodes were identified and the spleen and liver were normal.

Skeleton. Many bones were involved with tumours of dark red marrow-like tissue. In the skull, both surfaces of the vault showed many firm, some calcified, nodules apparently originating from the marrow zone; the membranes covering these showed many ecchymoses. Large tumours had invaded the orbital cavities causing great proptosis. The skull in its unaffected parts appeared to be of normal thickness, but showed only traces of pink marrow. The brain was oedematous, but showed no leisons.

Histology: Abdominal Lymph Nodes. The general architecture was destroyed by increase of fibrous tissue; the follicles were not obvious, and the medulla was widely infiltrated by cells about the size of lymphocytes, forming in some parts a distinct rosette pattern (Fig. 6); in addition, occasional large cells having pleomorphic nuclei could be seen. Sections stained by Mallory's phosphotungstic acid haematoxylin method, showed the centres of the rosettes to be a compact mass of fibres. Special staining failed to show any plasma cells.

Bony Tumours. These were composed of cells similar to those of the abdominal lymph nodes, but lacked any definite pattern; both lacunar reabsorption and formation of osteoid tissue was present around the cellular deposits.

DISCUSSION

The case presented as one of acute rheumatic fever with the accidental discovery of an abdominal tumour. The true nature of the tumour was not suspected till the

effects of the metastases became evident, and was not confirmed until after autopsy and histological examination. This is in keeping with the usual clinical course as far as the diagnosis of neuroblastoma is concerned; Willis states that the clinical features of neuroblastomas are usually those of the metastases. The Pepper type, and the vast majority of the Hutchinson type, because of their degree of malignancy and early dissemination, are almost uniformly fatal in 3 months after they are first seen.

diagnosis with the multiple small osteolytic defects in the skull, ribs and all other bones X-rayed. The picture closely resembled that seen in multiple myelomatosis. The diastasis of the skull sutures and palisade spiculation are said to be very characteristic of neuroblastoma secondaries. The very rapid dissemination of the growth is evidenced by the fact that on 1 August X-rays of the chest and pelvis indicated no bony lesions and on 25 September diffuse secondaries were seen in all bones X-rayed. Unfortunately the first skull X-rays were only taken on the latter date, though from the size of the skull secondaries it is very probable that these occurred at an earlier date than the other bony secondaries.

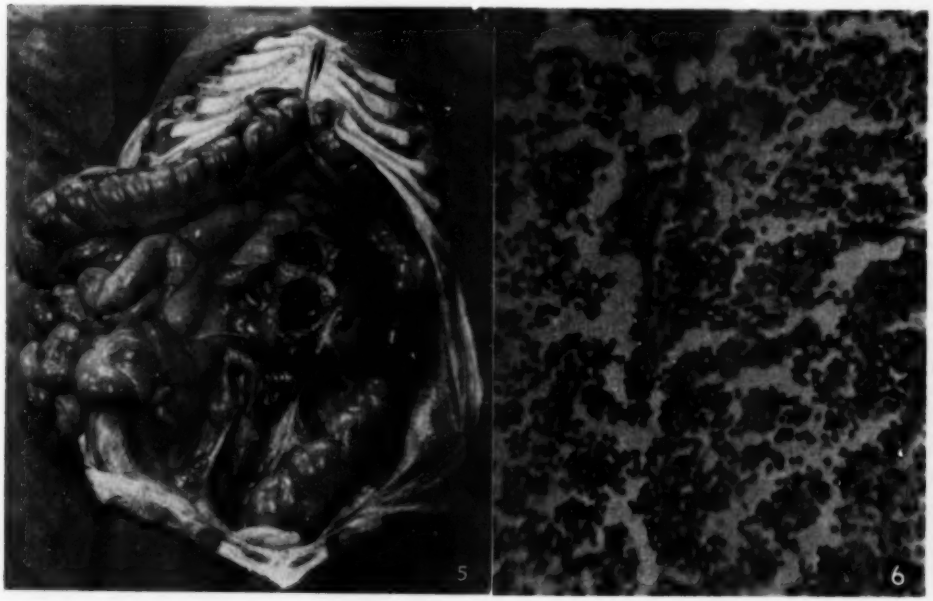


Fig. 5. Autopsy appearance of the retroperitoneal mass of lymphatic glands with extension to the iliac group.
Fig. 6. Histological picture showing typical rosette formation (Mallory's stain).

In this case a combination of both the Pepper and Hutchinson types seems to have been present with extensive dissemination to the abdominal lymph nodes, the skull and other bones. A diagnosis of a predominantly Hutchinson type seems justified in view of the gross skull involvement and the non-involvement of the liver itself. The disease made its appearance rather later than usual; Willis states that about three-fourths of the cases present before the age of 4 years. The facial appearance suggested the diagnosis of chloroma, but this facies is not uncommon with the Hutchinson type of neuroblastoma with retro-orbital secondaries. She also exhibited the subconjunctival haemorrhage which has been noted in many cases. Needle biopsy of the skull tumour was unsuccessful, but this is usually the case; if the typical rosette formation is found on needle biopsy, then the diagnosis is confirmed.

The X-ray findings eventually gave the clue to the

SUMMARY

A case of neuroblastoma in a child aged 10 years is reported.

This appears to have been a predominantly Hutchinson type of neuroblastoma with massive skull secondaries and diffuse involvement of other bones.

The characteristic features are discussed briefly.

I am indebted to the Director of Medical Services, Northern Rhodesia, for permission to publish this case. I have to thank Dr. S. C. Buck for the post-mortem and other pathological reports, Dr. E. A. Keith for X-ray reports, and Dr. L. O. C. Cookson for invaluable advice.

The most excellent photographs were taken by Mr. Nigel Watt of the Northern Rhodesia Information Department.

TERRAMYCIN IN THE TREATMENT OF AMOEBIC DYSENTERY

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The efficacy of certain antibiotics in the treatment of amoebic dysentery is well known. From published reports, Aureomycin and Terramycin appear to be the most successful.

Using Terramycin, Hrenoff [3] treated 9 rhesus monkeys, of which 6 remained clear of amoebae at the end of 12 weeks. The other 3 relapsed and the parasite reappeared. Most and van Assendelft [4, 5] reported on the effect of Terramycin in asymptomatic or mildly symptomatic cases of amoebic dysentery and state that of 37 cases which received 2 gm. of the drug daily for 10 days, only one parasite recurrence had been observed. Tobie [6] and his colleagues tested the use of Terramycin against cyst-passers in institutions and found that it was by far the most effective drug they had tried. Crosnier [1] and his colleagues reported a comparative series involving some 200 cases in which at 2½ months 40% treated with Aureomycin relapsed and none of those treated with Terramycin relapsed even at the end of 6 months.

This paper reports the results of treatment with Terramycin alone in the treatment of 51 cases of acute amoebic dysentery in Bantu males and of the treatment of 15 European cases with a mixture of Terramycin and Chloroquine. Africans are notoriously reluctant to report for follow-up, but the European cases were better in this respect. The two series will be treated separately.

TERRAMYCIN

Material and Method. Terramycin was administered to 51 cases of acute amoebic dysentery in Bantu males. Some selection of the patients was necessary to ensure as uniform material as possible and to avoid unjustifiable experiment on those seriously ill. All patients were complaining of diarrhoea with blood and mucus, showed open ulceration at sigmoidoscopy and had actively motile amoebae in stools or scrapings from the ulcers. In the majority of cases the attack was the first and no patient was accepted who had been treated in the past year for amoebic dysentery. Cyst-passers were not accepted for the series. Cases showing dehydration, chloride deficiency, abdominal distension, sloughs on sigmoidoscopy or signs which have been found to presage perforation or ileus were excluded for obvious humanitarian reasons.

Sigmoidoscopy was done daily until all ulcers had healed and on the 10th, 15th, 20th and 27th days when stool examination was also carried out both by direct and zinc sulphate flotation methods. Whenever possible scrapings were examined for parasites. Results were classified into 4 categories.

Success: Symptom free. All ulcers healed and no amoebae found in stool examination.

Possible Failure: Usually symptom free. One or more ulcers still open, but amoebae not found in stools or scrapings.

Absolute Failure: Open ulceration with motile amoebae in stools and scrapings.

Removed from Treatment: Cases which deteriorated in spite of the test therapy were removed from the series and given treatment of known value. These cases should be considered failures.

Dosage. Two hundred and fifty milligrammes of terramycin were given 6-hourly by mouth for 15 days. A placebo of calcium gluconate gr. 5 *t.d.s.* was given from the 16th to the 27th day when the patient was discharged and instructed to return at monthly intervals.

RESULTS

Of the original 51 patients, 2 developed signs of amoebic hepatitis while taking Terramycin despite favourable progress of the bowel lesions and symptoms. The hepatitis progressed and was given treatment with Emetine in one case, and Chloroquine diphosphate in the other, both of which produced rapid improvement. These 2 cases were discarded from the series leaving a final number of 49. One patient already classified as a success discharged himself from hospital on the 13th day of treatment and is assumed for statistical purposes to have remained a success for the next 14 days. In 2 patients ulcers and parasites persisted until the 15th day when they were both given Emetine and Diodoquin which later resulted in clinical and sigmoidoscopic cure. At 20 days one case which had been considered a success at 10 and 15 days complained of recurrence of diarrhoea with blood and mucus. Sigmoidoscopy showed open ulcers but no parasites were found in scrapings or stools. He was given Emetine and Diodoquin. A further case at 30 days became an absolute failure and other treatment was given.

As explained above, follow-up was very incomplete

TABLE I: THERAPY OF ACUTE AMOEBIC DYSENTERY*

	Emetine	*Aureomycin*	*Terramycin*
No. of Cases	50	52	49
10 *Days:*			
Success		67·3	87·7
Probable Failure		30·8	8·2
Absolute Failure		2·0	4·1
Removed from Treatment		—	—
20 *Days:*			
Success	50	94·2	89·8
Probable Failure	22	3·9	4·1
Absolute Failure	28	2·0	2·0
Removed from Treatment			4·1
27 *Days:*			
Success		94·2	91·8
Probable Failure		3·9	—
Absolute Failure		—	—
Removed from Treatment		2·0	8·2

* Figures are given in percentages.

although our patients were paid a small sum of money each time they returned. The available figures are as follows:

At 2 months: 4 successes and 1 absolute failure.
At 3 months: 3 successes.
At 4 months: 1 success.
At 6 months: 1 absolute failure.

Table I shows the immediate result of treatment. The results given by Aureomycin and Emetine are included for purpose of comparison.

TERRAMYCIN AND CHLOROQUINE

EUROPEAN CASES

It would be logical to supplement the local action of Terramycin in the bowel with a systemic amoebacide such as Emetine or Chloroquine. Most suggested a combination of Terramycin, 2 gm., and Chloroquine, 320 mg., daily in divided doses for 10 days.

Eight private and 7 hospital patients were placed on this regime. Of these, 6 were suffering from acute amoebic ulcerative colitis, 5 had symptomatic amoebiasis with trophozoites and 4 were mildly symptomatic cyst-passers. In spite of pressing requests that all should return at monthly intervals for 6 months, 4 hospital patients defaulted from the start. The private patients sent their stools more or less regularly. One hospital patient relapsed at 2 months and one private patient within a month after treatment was finished. Both had suffered from the acute dystenteric form of the disease. All the others who submitted stools for examination have remained free of amoebae for the times stated below:

Less than:	*Relapse*	*Negative Stools*
1 month	1	
1 month		7
1½ month		4
2 months	1	2
3 months		4
4 months		4
5 months		0
6 months		4
8 months		1
10 months		1
No. of defaulters	4	

These figures are very incomplete and the most we can say is that 2 out of 15 cases relapsed within 2 months, and that there were 4 patients still free of amoebae at 6 months. The single case followed to 10 months was still free of parasites.

DISCUSSION

It can be seen from Table I that the immediate results obtained with Terramycin alone are much superior to those with Emetine gr. 1 for 15 days. The cases treated with Emetine were in every way comparable to the present series and the same rules of selection and assessment were applied. With Terramycin the success rate at 20 days was 90% and absolute failure rate 2%; with Emetine the figures were 50% and 28% respectively. When the Terramycin results are compared with those of Aureomycin, it can be seen that there is no statistically signficant difference. The point of interest and signficance that emerges from these figures is that excellent immediate results can be obtained with an antibiotic used alone in the treatment of amoebic dysentery.

The mode of action of the antibiotics in this disease is not certainly established, though there is *in vitro* evidence that Aureomycin has direct amoebacidal properties. On the other hand it is known that amoebae cannot live alone in pure culture, but require the presence of other organisms. The effect of an antibiotic on the bowel flora is probably an important factor in its effectiveness. The view has been suggested elsewhere that the action of antibiotics in amoebiasis is largely determined by their bacterial spectrum.[2] In the liver the amoeba lives in pure culture, and we[3] have tried the effect of Aureomycin in the treatment of amoebic liver abscess with poor results. It may be significant that 2 patients in the present series developed signs of amoebic hepatitis while taking Terramycin and it suggests that this drug is as ineffective as Aureomycin in this disease.

Although very incomplete, our follow-up studies on cases treated both with Aureomycin and with Terramycin show a significant relapse rate. None the less we think from our experience with many other drugs that the relapse rate with Terramycin is no higher than with any other single well-established treatment. As in previous papers, we have used drugs singly rather than in combination in order that our experiments might lead to conclusions of scientific value in the assessment of individual drugs. We wish to stress that this paper is not a recommendation for the routine treatment of amoebic dysentery with Terramycin alone. In the rapid suppression of symptoms and healing of ulcers the drug has met with outstanding success, but we feel that the administration in addition of a recognized amoebacide is a wise precaution in order to reduce the incidence of relapse.

We would emphasize, moreover, that although Terramycin and Aureomycin have been shown by others to clear the mild symptomatic or symptomless cyst-passer of his parasites, it is wasteful to use expensive antibiotics on the simple non-dysenteric case showing neither ulceration nor secondary infection. *Aureomycin and Terramycin are indicated only in the dysenteric form of the disease with colonic ulceration.* In mild cases of dysentery these antibiotics will justify their expense by saving hospitalization and by allowing the patient to remain ambulant and even at work. In the severe fulminant cases their use is often life saving.

In view of the excellent results we have had with Terramycin alone we feel that the dosage of 1 gm. only for 15 days is sufficient. Owing to the relapses which follow the use of antibiotics alone, it would seem reasonable to give a systemic and an intestinal amoebacide in addition to the antibiotic.

SUMMARY

1. Terramycin used alone is a most effective agent in the treatment of acute dysenteric amoebiasis.

2. As relapses may occur, amoebacides should be used as well.

3. Most cases of amoebic dysentery may now safely be treated without hospitalization.

4. Non-dysenteric amoebiasis does not warrant the use of expensive antibiotics.

We wish to record our gratitude to Pfizer Overseas Inc. for

the generous supplies of Terramycin placed at our disposal. Our thanks are also due to the Natal Provincial Administration and to the Council for Scientific and Industrial Research for the facilities they have placed at our disposal.

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BLOOD GROUP SUBSTANCES IN ANTITOXIC SERA

A POTENTIAL TRANSFUSION HAZARD

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The existence and clinical importance of immune forms of anti-A and anti-B isoagglutinins are no longer questioned. They may be formed during a pregnancy in which the mother and foetus belong to different blood groups, particularly when the mother is group O and the foetus group A; such immune agglutinins may give rise to haemolytic disease of the newborn.[1] It is also now known that they may result from an injection of horse serum globulin or of vaccines, especially toxoids, in which the organism or the medium or both may possess the appropriate antigenic group substance. This problem is admirably discussed by Mollison[2] who reviews the possible sources of the antigens, describes the available techniques for demonstrating immune isoagglutinins and also reports a case in which a previously 'safe' group O donor became a temporarily dangerous donor as the result of the injection of a prophylactic dose of tetanus antitoxin; the resulting immune anti-A agglutinins gave rise to a haemolytic transfusion reaction when blood from this donor was administered to a recipient belonging to group A.

We operate a blood transfusion service for over 300,000 African workers on the mines of the Witwatersrand, the workers themselves being the donors. Part of the excellent medical service afforded them by the mining industry is the routine use of prophylactic vaccines, and owing to the nature of the work, the administration of tetanus anti-toxin and other antitoxic sera is relatively common. It was therefore considered important to find out whether group substances could be demonstrated in antitoxic sera and, if so, whether the antigens were liable to be present in a significant proportion of batches. We are fortunate in possessing a large serum department in which all types of antitoxic sera are produced from over 200 horses each year and it was decided to investigate consecutive pools of horse plasma, before and after fractionation, for the presence of group substances known to be present in the saliva, serum and other tissues of many animals, including horses. I am grateful to Dr. J. H. Mason, Superintendent of our Serum Department, for providing me with samples of immune plasma and globulins prepared in his laboratories.

MATERIAL

Thirty-six batches of pooled plasma from hyperimmune horses and the resulting globulins, obtained by the now almost universally used process of enzyme digestion and ammonium sulphate precipitation, were investigated. The series comprised the following antitoxins: 5 diphtheria, 7 welchii, 1 septique, 10 anti-venene, 1 streptococcus, 1 dysentery and 11 tetanus. In almost every case each sample of plasma represented a pool of 50 litres obtained from 8–10 horses and the sample of globulin was collected at the end of the fractionation process.

METHODS

Each sample of plasma (and the globulin resulting from it) was tested simultaneously for the presence of agglutinins and group substances; in this way uniformity of conditions, test cells and test grouping sera could be ensured.

Tests for Agglutinins. These were carried out in small tubes. Two drops of plasma were added to an equal volume of a 2% suspension of washed group A, B and O cells and the globulin was tested similarly. The mixtures were allowed to stand at laboratory temperature for one hour and were then examined macroscopically and, where necessary, microscopically. Centrifugation was not resorted to. Comparative tests were carried out on 6 samples at 37° C and as no significant differences were obtained it was decided to continue the investigations at laboratory temperature.

Tests for Group Substances. Inhibition tests were carried out by the technique customarily employed for detecting and titrating group substances in human saliva, except that the conditions were rendered more severe by using high-titred grouping sera of groups A and B diluted to a standard agglutinating titre of 1:64. Preliminary experiments showed that horse plasma pools invariably agglutinated human red cells of all groups, so that to test for the presence of group substances it became necessary to destroy these agglutinins by heating each sample of plasma to between 60° C and 65° C for half an hour. One drop of each test grouping serum was mixed with one drop of heated and unheated plasma respectively and the globulin was tested in the same manner at the same time. It was not necessary to heat the globulins as it was found that they either contained no agglutinins or in a few cases only very weak agglutinins of negligible titre. The mixtures were allowed to remain in contact at laboratory temperature for one hour after which they were tested with 2 drops of a 2% suspension of the appropriate A and B cells (A cells on B test serum mixtures and B cells on A test serum mixtures). Macroscopic and microscopic readings for agglutination or inhibition of agglutination were made at the end of one hour.

RESULTS

Agglutinins. As was to be expected of pooled horse plasma, every one of the 36 specimens agglutinated human A, B and O cells. The agglutination was macroscopically visible without centrifugation in every case, the titres ranging from 1:2 to 1:50 and being dependent to a considerable extent on the age of the plasma, as it is the custom to store the bulk plasma at room temperature for varying periods before fractionation.

The agglutinins were not demonstrable in the gamma globulin in 26 specimens but in the remaining 10 they were present in very low titre and agglutination was usually only visible microscopically. This was not unexpected as human isoagglutinins are described as being maximally present in the fraction III-1 and not to any appreciable extent in the gamma globulin, and in the case of antitoxic sera the fractionation and purification process appear to have some destructive action on the agglutinins.

Group Substances. As one would anticipate, the mixtures of unheated plasma and grouping serum agglutinated all test cells strongly; however, the heated plasma failed to show any significant group substance content; unless the group substances in horse plasma are much more heat labile than human group substances, which can well withstand boiling and even higher temperatures, it is to be assumed that the fractionation and purification process concentrates the group substance content in the globulin fraction.

None of the 36 specimens of globulin had any significant inhibiting action on group A serum, this pointing to the virtual absence of B or B-like substance. On the other hand, and this is of fundamental importance, every specimen of globulin inhibited group B serum strongly so that the mixtures of group B serum and globulin after contact failed to agglutinate A cells except in 4 cases where slight agglutination was visible. The inhibiting titres were of the same order as those found by us in titrating specimens of human saliva for their group substance content, although in a few batches much higher titres were obtained. The important practical point therefore emerges that an A or A-like substance was present in every specimen of horse serum globulin investigated; B substance was not demonstrable under the experimental conditions used. The A substance is apparently a property of the horse serum *per se* and is not related to the type of antitoxin as there was no correlation between the inhibiting action and the specificity of the antitoxins.

DISCUSSION

The findings reported here fit in very well with, and explain, the observations of Davidsohn [3] and Mollison [2] that the injection of horse serum in man can give rise to an increase in the anti-A titre in the form of an immune isoagglutinin. The antigen would be liable to produce this result in persons belonging to group O or group B in an analogous manner to the injection of saliva from a group A secretor or of the purified group substances derived from human or animal sources; these latter materials are, in fact, used in volunteers for the production of high-titred grouping serum.

The production of immune anti-A agglutinins and haemolysins in group B donors is of relatively small practical importance, since such donors are used almost exclusively for recipients of the same group, and only occasionally for recipients of group AB. The risk, however, is a very real one in the case of group O donors when used for recipients belonging to groups A or AB. The experimental proof recorded here substantiates and affords an immunological basis for the clinical observation that a previously safe donor can be converted to a dangerous donor by the injection of antitoxin and consequently every donor should be specifically questioned on this point before being bled. A history of such an injection during the previous few months should make it obligatory to use the blood from such a donor for a recipient of the same group. The same precautions should probably be taken in the case of injections of certain vaccines, expecially toxoids.

The actual degree of immune response to the injection will vary with the group substance content of the batch of antitoxic serum and from donor to donor, as the capacity to produce antibodies is an individual characteristic. The techniques for demonstrating the immune forms of anti-A and anti-B are relatively simple and should probably now be carried out as a routine where the blood of group O donors is to be used for recipients of other groups.

SUMMARY

Thirty-six consecutive batches of antitoxin have been investigated for the presence of blood group substances.

In every case an A or A-like substance was present; B substance was not demonstrable.

As the injection of group substances results in the formation of immune agglutinins and haemolysins, the above findings explain the mechanism by which the injection of antitoxic sera may produce a similar result.

Blood donors, especially of group O but also of group B may, after such an injection, be rendered dangerous by the formation of immune anti-A.

Every donor should be questioned on this point and a recent history of an injection of antitoxin or of vaccine should debar the use of such a donor for recipients of other groups.

The blood of every donor to be used for recipients of other groups should be investigated for the presence of immune forms of agglutinins by the relatively simple techniques now available.

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NEW PREPARATIONS AND APPLIANCES

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The product is in an aqueous solution and is stable when

it is refrigerated. The potency is protected by an expiration date. Pancebrin may be administered by intramuscular or intravenous injection and may also be added to intravenous infusions of dextrose and physiological saline.

Pancebrin is indicated in the prevention and treatment of multiple vitamin deficiencies. Avitaminosis may be associated with almost any disease and frequently may be aggravated by therapeutic procedures. Pancebrin is particularly recommended for surgical patients and in cases of impaired absorption or utilization of vitamins which may occur in diarrhoea, peptic ulcer, colitis, regional enteritis, typhoid fever, sprue and obstructive lesions. Pancebrin is also ideal in cases in which patients cannot take food by mouth due to nausea, vomiting, or anorexia; in which there is an excessive loss of vitamins by increased excretion; and in which vitamin requirements are increased by prolonged fever and severe infections. Pancebrin is also useful in restricted diets in the presence of infectious diseases, heart failure, nephritis, gall bladder disease, peptic ulcer, alcoholism, and old age.

Ordinarily, 2 c.c. at each injection will be adequate. The number of doses and duration of treatment will depend upon the nutritional status at the onset of the illness, the severity of the condition and the amount of vitamins available in the diet.

To-day in dietary deficiencies, surgical procedures, shock, etc., the use of multiple vitamins has become common practice. It remained, however, for the adequate, well-balanced, water-soluble formula to appear before those patients requiring parenteral administration of these factors could be treated with a single product containing most of the desired components.

THE BENEVOLENT FUND

The following contributions to the Benevolent Fund during May–July 1952 are gratefully acknowledged:

Votive Cards: *In Memory of*:

Mrs. I. Loney *by* Dr. C. E. L. Burman.
Mr. J. J. Levin *by* Dr. G. T. du Toit.
Mrs. J. van Zyl *by* Dr. D. H. le Clus.
Dr. W. H. H. Croudace *by* Dr. A. E. Pinniger.
Dr. M. G. Pearson *by* Dr. A. E. Pinniger.
Christina E. Richter *by* Dr. P. Jabkowitz.
Dr. E. B. Brooke *by* Dr. James Black, Drs. S. Heymann and S. N. Javett.
Mr. J. T. Kieser *by* Dr. and Mrs. M. Meyers.
Mrs. A. Petrie *by* Dr. H. E. Brown.
Mr. C. J. Coetzee *by* Dr. D. H. le Clus.
Mr. S. V. Brooks *by* Dr. C. A. H. Green.
Mrs. McGill *by* Dr. M. Meyers.
Dr. E. W. Ingle *by* Drs. C. E. L. Burman, R. Schaffer, S. H. Cohen.
Mr. Cecil Gericke *by* Dr. V. Brink.
Mr. R. Rice *by* Dr. W. F. Leith.
Dr. G. H. W. Ellacombe *by* Drs. A. L. Burman, A. Kinghorn, Mr. P. E. Hall, Ivor Verster, Messrs. Simpson Bros., Pope & Co., Mrs. Petrie, Mr. and Mrs. R. N. Woollacott, Mr. and Mrs. W. Shelmerdine, Mr. W. Brown.
Mr. D. J. Gillespie *by* Dr. S. H. Cohen.
Baby McAlpine *by* Drs. Schwartz and Solomon.
Dr. D. van der Merwe *by* Dr. L. E. Lane.

Total Amount Received from Votive Cards £36 12 6

Services Rendered to:

Lt.-Col. Baines *by* Dr. S. Grodd.
Dr. A. Goldfoot *by* Dr. A. W. S. Sichel.
Dr. G. F. van der Merwe *by* his Colleagues.
Dr. Bokwe and his Family *by* Drs. Waddell, Navid and Morgenthal.
Dr. and Mrs. van der Poel *by* his Colleagues.
Dr. D. J. Sagor *by* Drs. J. J. Jacobson, Herries and Fuller, Jean Walker, Prof. Forman, Drs. Jannie Louw, Reichlin and W. A. S. Jacob.
Dr. A. M. Whitaker *by* Dr. J. A. Currie.
Dr. A. J. Orenstein *by* Dr. M. Weinbren.
Dr. A. Werb *by* Drs. L. Mirvish, H. and B. Hirschon, A. Reichlin and R. L. Tobias.
Dr. James Walker *by* Drs. C. E. L. Burman and J. P. Grieve.
Master Cyril Kaufman *by* Drs. Greenwood, Theron, Samuel, Jacobson and G. Fox.
Mrs. B. Walker *by* Members of the Neuro-surgical Unit, Johannesburg.
Eugene Toker *by* Mr. A. Lee McGregor, Drs. Greenwood, Theron, Samuel and Jacobson.
Jack Ackermann *by* Drs. Bosenberg and Opie.

Total Amount Received from Services Rendered £180 18 0

Donations:

Legacy, Estate late Dr. Walwyn Thomas	£100 0 0
Accident Supt., London Lancashire Insurance Co.	3 0 0
Dr. P. Spaarwater	0 10 6
Dr. G. W. Gale	0 5 0
Dr. Norman Klass	2 2 0
Medical Graduates' Association, Medical School, Johannesburg	7 1 1
Dr. H. G. Goldwater	5 5 0
Dr. Wolf Rabkin	1 1 0
Members, Cape Western Branch (Collection Box)	3 2 0
Dr. H. C. Martin	0 10 0
Dr. I. Kallmeyer	0 11 0
Dr. J. R. Pugh	0 5 6
Sale of Booklet "Physician and Friend"; J. M. Troup	1 10 0
Members of Cape Western Branch (Collection Box)	3 13 6
Dr. C. Ross	0 10 6
Dr. E. F. W. Moon	0 5 0
Dr. H. Saacks	0 10 6
Dr. A. G. Blythe	0 5 0
Dr. T. H. P. Bohlmann	1 1 0
Dr. L. Blumberg	1 1 0
Dr. C. Weinberg	0 10 6
Dr. G. C. Peter	1 1 0
Dr. P. L. Botha	1 0 0
	£352 11 7

PASSING EVENTS

THE DOCTOR'S INCOME TAX GUIDE: BY J. LAVINE, B.COM., A.C.W.A.*

[This Guide was published in the *Journal* last year (1 September 1951). The author has now submitted some minor changes rendered necessary by recent legislation.—*Editor.*]

The following changes relevant to the *Guide* were introduced by the Income Tax Act, 1952. They are effective from 1 July 1951, i.e. they first apply to the year of assessment ended 30 June 1952.

1. *Rebates* (*p.* 639). The normal tax primary rebate has been reduced from £31 to £26 in the case of married persons and from £22 to £21 for unmarried persons. The amounts of tax payable for 1952 on various taxable incomes may be obtained with sufficient accuracy to the nearest £1 by adding to each of the figures shown in Table D on page 640 (starting with £1,000 of taxable income), £7 for a married person and £2 for an unmarried person.

Table E on page 640 (Exemption limits) is changed as follows:—

No children	£405
1 child	£555
2 children	£703
3 children	£848
4 children	£990
5 children	£1,130
6 children	£1,268

2. *Dividends*: *Private Companies.* The method of apportioning the income of private companies to shareholders for normal and super tax purposes has been abolished as from 1 July 1951. Consequently all references to apportionment and the Private Companies Levy are to be ignored in relation to the 1952 tax year. It should be noted, however, that any dividends derived from private companies on or after 1 July 1951 are treated in the same manner as public company dividends, i.e. they are added to the shareholder's super-taxable income only, notwithstanding that they may have been distributed out of profits which had previously been apportioned and taxed. There is a concession regarding the maximum amount of private company dividends received prior to 1 July 1952 that may be so taxed.

3. *Compensatory Payments* (*p. 628*). The following is now declared to be taxable:—

Any amount, whether a voluntary award or otherwise, accruing in respect of the relinquishment, termination, loss, repudiation, cancellation or variation of any office or employment or of any appointment or right to be appointed, except where the receipt is a lump sum award from any recognized pension or benefit fund.

* * * *

We deeply regret to record the death of Dr. T. H. R. Gluck of Postmasburg, C.P.

* * * *

Dr. A. D. Muirhead (of Cambridge University and St. Thomas' Hospital) has taken over the practice of Dr. A. J. Patterson at 23 Peak Drive, Pinelands, C.P.

* * * *

Dr. and Mrs. A. W. S. Sichel have returned to Cape Town from their overseas visit. Dr. Sichel, immediate Past-President of the British Medical Association, installed his successor at the Dublin meeting of the B.M.A.

REVIEWS OF BOOKS

METABOLISM

Metabolism: Clinical and Experimental. Vol. 1. No. 4. July 1952. New York: Grune & Stratton, Inc.

Contents: 1. Metabolic and Clinical Effects of Corticotropin (ACTH) on Essential Glycogenosis (von Gierke's Disease). 2. Serum Lipids and Lipoproteins in Diabetic Glomerulosclerosis. 3. Diabetes Detection Survey Among Male Physicians. 4. Metabolic and Clinical Effects of Different Regimens in Patients with Chronic Liver Disease. 5. Blood Sugar and Food Intake in Rats with Lesions of the Anterior Hypothalamus. 6. The Role of the Reticuloendothelial System in Vitamin A and Cholesterol Metabolism. 7. The Effect of Pituitary Growth Hormone on the Insulin Tolerance of the Adrenalectomized Dog. Clinical Conference on Metabolic Disorders: Gout. Abstracts.

THE BRITISH ENCYCLOPAEDIA OF MEDICAL PRACTICE

The British Encyclopaedia of Medical Practice, Volume 10. Edited by The Rt. Hon. Lord Horder, *G.C.V.O.*, M.D., F.R.C.P. (Pp. 678 + xi, with 117 Figures. Second Edition. 67s. 6d.) London: Butterworth (Publishers) Limited.

Contents: 1. Pituitary Gland Diseases. 2. Pityriasis Rosea. 3. Pityriasis Rubra Pilaris. 4. Placenta: Development and Diseases. 5. Plague. 6. Plastic Materials in Surgery. 7. Pleurisy. 8. Pneumoconioses. 9. Pneumonia, Lobar. 10. Pneumothorax, Spontaneous. 11. Poliomyelitis and Polioencephalitis. 12. Polyneuritis and Interstitial Neuritis. 13. Post-Mortem Examination. 14. Pregnancy: Normal and Pathological. 15. Prematurity. 16. Presbyopia. 17. Prickly Heat. 18. Prostate Diseases. 19. Pruritus and Prurigo. 20. Psittacosis. 21. Psychiatry in Children. 22. Psychoanalysis. 23. Psychoneuroses and Psychotherapy. 24. Psychopathic Personality. 25. Psychoses—Affective Psychoses. 26. Psychoses—Paranoia and Paranoid States. 27. Psychoses—Schizophrenia. 28. Psychoses—Alcoholic Psychoses. 29. Psychoses—Toxic Infective Psychoses. 30. Psychoses—Pre-Senile and Senile Psychoses. 31. Psychoses—Traumatic Psychoses. 32. Psychoses—Convulsion Therapy. 33. Puerperium. 34. Pyelitis. 35. Pyloric Obstruction. 36. Pyomyositis, Tropical. 37. Pyrexia of Obscure Origin. 38. Rabies. 39. Radioactive Isotopes. 40. Ratbite Fever. 41. Raynaud's Phenomenon. 42. von Recklinghausen's Disease. 43. Rectum Diseases. 44. Refraction—Practical Methods. 45. Rejuvenation. 46. Relapsing Fevers. 47. Retina Diseases. Index.

The alphabetical scope of this volume in the new (second) edition of *The British Encyclopaedia of Medical Practice* has produced a great variety of topics ranging through all branches of medicine and surgery.

Glaister, e.g. writes on the post-mortem examination, and takes a far more positive attitude about who can give consent for a post-mortem dissection in the case of death from natural causes than he outlined in the latest edition of his *Textbook of Medical Jurisprudence*. In his view, the nearest relative may give consent or, if death has occurred in hospital, the hospital superintendent may give the permission, provided the nearest relative does not make objection. The difficulty, of course, is to define 'nearest relative', and the practice of obtaining specific written consent for the dissection from the relative is undoubtedly a wise one. Fortunately, we in South Africa are no longer in an obscure or difficult situation because of the recently gazetted Act which makes lawful autopsies not of medico-legal significance. Professor Glaister also draws attention to an interesting result of the refrigeration of dead bodies. This produces a reddish coloration of the blood and, therefore, of the surface of the body as well as the viscera. The cause of this change is not known and knowledge about its occurrence is important in order that the refrigerated appearance can be distinguished, e.g. from carbon monoxide poisoning.

There is an interesting chapter on the physiology and pathology of pregnancy. This admirable section is marred by an eponymous reference to the frog test for pregnancy. The considerable dispute about the eponym makes it desirable to adhere to a non-contentious, descriptive nomenclature—preferably the female frog or *Xenopus* test.

The difficult problem of the psychopathic personality is discussed briefly by Sir David Henderson. The definition, however, is so broad and allows so much latitude (particularly in disputes before our Courts) that it is clear there is still very considerable room for debate.

There are, of course, also many other extremely useful discussions of matters touching the daily practice of medicine. The volume under review makes it quite clear that the second edition of *The British Encyclopaedia of Medical Practice* is destined to be a very adequate reference source for the medical practitioner.

MEDICAL MILESTONES

Medical Milestones. By Henry J. L. Marriott, M.D. (Pp. 293 + xii. $3.50.) Baltimore: The Williams & Wilkins Company. London: Baillière, Tindall & Cox, Limited. 1952.

Contents: 1. Beware the Imposter. 2. The Mold Era. 3. First and Still Foremost. 4. Threat to Tuberculosis. 5. A Truce with Typhus and Typhoid. 6. The Widest Range. 7. Bacteria Against Bacteria. 8. Medical Shrapnel. 9. Blue Babies to Pink. 10. Spoiled Sweet Clover. 11. Goiters Slowed Down. 12. Hormones and Cancer. 13. Animal Factors in the Blood. 14. From Poison Gas to Medicine. 15. 'If Anyone Touches a Leper'. 16. Hope for the Rheumatic. 17. 'Million-Murdering Death'. 18. Once Biting, Twice Shy. 19. Mal de Mer. 20. All That Glitters. Index.

The art of informing the layman about the functions of his body is not one which many medical writers possess. Too often accuracy is sacrificed to absurdly euphoric claims (particularly in the field of treatment) and the layman receives a totally distorted view of disease or what the doctor can reasonably be expected to do.

In this book Dr. Marriott reveals that he belongs to the select few able to impart useful information in an accurate fashion without undue alarm or false optimism. This is a remarkable achievement, and for this reason the volume is one which can conscientiously be recommended to the patient who approaches his doctor for reliable information about modern methods of treatment. As is to be expected, special attention has been devoted to Cortisone and ACTH. Dr. Marriott concludes this chapter with the statement: 'The great hope for the rheumatic is that the door to a proper understanding of his disease has been opened for the first time, and he can look forward to the future with a confidence which has never before been justified in the long history of arthritis.'

The author has also included useful general medical information (not necessarily dealing with treatment) of which the educated citizen should be aware. This accounts for the inclusion of topics such as the Rh factor which, although severely technical in character, should be explained to laymen.

There is a wealth of well-founded observation with many interesting historical excursions. The book can be recommended very strongly.

OBSTETRICAL PRACTICE

Obstetrical Practice. By Alfred C. Beck, M.D. (Pp. 1073 + xiv with 947 figures. 76s. 6d. 5th ed.) London: Baillière, Tindall & Cox. 1951.

Contents: 1. The Ovarian Cycle. 2. The Menstrual Cycle. 3. Relation of Menstruation to Ovulation, Fertilization, and Implantation. 4. Chronological Development of Pregnancy. 5. The Fetal Membranes 6. Physiology of the Fetus. 7. Changes in the Maternal Organism. 8 Diagnosis of Pregnancy. 9. Management of Pregnancy. 10. Presentation, Position and Posture. 11. The Essential Factors in Labor. 12. The Mechanism of Labor. 13. Clinical Course of Labor. 14. Management of Labor. 15. The Puerperium. 16. Lactation. 17. Posterior Positions of the Occiput. 18. Face Presentation. 19. Breech Presentation. 20. Transverse Presentation. 21. Compound Presentation and Prolapse of the Umbilical Cord. 22. Multiple Pregnancy. 23. Diseases of the Decidua and Fetal Membranes. 24. Abortion. 25. Ectopic Gestation. 26. Hyperemesis Gravidarum. 27. Preeclampsia and Eclampsia. 28. Medical and Surgical Complications of Pregnancy. 29. The Pathology of Labor: Anomalies of the Powers. 30. Faulty Passages—Soft Part Dystocia. 31. Faulty Passages—Contracted Pelves. 32. Faulty Passages—Contracted Pelves —Rare Types. 33. Placenta Previa and Abruptio Placentae. 34. Rupture of the Uterus. 35. Inversion of the Uterus. 36. Retained and Adherent Placenta. 37. Postpartum Hemorrhage. 38. Puerperal Infection. 39. Artificial Interruption of Pregnancy. 40. Methods used to hasten or complete the Dilatation of the Cervix. 41. Forceps. 42. Version. 43. Cesarean Section. 44. Destructive Operations 45. Repair of Lacerations. 46. Resuscitation of the Newborn Child 47. Analgesia Amnesia and Anesthesia. Appendix. Index.

Owing to the many advances in obstetrics since the appearance of the first edition in 1935, the latest edition of this well-known American textbook has to a large extent been rewritten. Many of the old illustrations have also been withdrawn and new ones added.

Helped partly by the Carnegie Institute, there has in recent years been a tremendous amount of experimental work done in America on the physiology of the menstrual cycle and the implantation and early development of the fertilized ovum. The outstanding experiments of Markee with intraocular endometrial transplants in animals and the investigations of Hertig, Rock, Heuser and Streeter, on large numbers of early fertilized ova are discussed and help to make these early chapters more than usually interesting and completely up to date.

In the management of pregnancy one is pleased to note that not only is the importance of diet during pregnancy stressed, but practical help is given in the form of diet outlines, nutrient values of various foods and other tables.

The treatment of the various obstetrical complications is sound and handled well. One does, however, notice that Lovsett's simple and useful manoeuvre for delivery of extended arms in breech presentation is not mentioned.

The management of that grave complication, anuria, is also unfortunately not discussed. This omission is all the more noteworthy because of the recent work at the British Postgraduate School, which has given such improved results in a condition in which hitherto the prognosis has been very bad.

The author is to be congratulated on the manner in which right from the early chapters, all the modern outstanding contributions on every subject are discussed. In addition every chapter has a well-compiled list of references to the literature, making this a valuable book for those engaged in obstetrical practice and for post-graduate students and authors.

CORRESPONDENCE

ADEQUATE INSURANCE PROTECTION

To the Editor: I feel I cannot let the occasion pass without placing on record my deep appreciation and gratitude for the splendid way the Atlas Assurance Co. handled my case. No trouble was too much. From the very outset they took control. I was even honoured by a visit from the general manager himself, who flew from Cape Town to meet me, and discuss the various points. They made no effort to persuade me to compromise or fight, leaving it entirely to me to decide what I would do.

A mistake I made in the past (I have since hastened to correct it) is that of inadequate protection. For 25 years I have been paying the minimum protection premium, and when suddenly confronted with a demand for £15,000 odd out of the blue, I was undone, so to speak. I hastened to enquire and found I was only covered for £1,000 and costs. Well, it won't happen again. I now have maximum protection, and sleep better for it. Although costs were awarded against the plaintiff, she could not be found, and the Company paid £3,500 for costs for the Defence. Altogether a good show.

Much that occupied the time of the Court throughout the long 3 weeks could not, naturally, be included in the judgment. The pros and cons of transplantation of ureters (which was the method adopted subsequently to treat this particular fistula), the Charlewood technique of repair, the pros and cons of therapeutic and prophylactic radiotherapy, took up 1,700 pages of typescript. To wade through all this took the Judge 9 months, and his admirably lucid judgment must stand as a lasting tribute to his acumen and impartiality.

K. M. Hairman,

615 Acutt's Arcade,
Gardiner Street,
Durban.
19 August 1952.

THE SUGAR SHORTAGE AS AN OPPORTUNITY

To the Editor: We have all been faced with the obese and/or diabetic patient in search of a palatable low-calorie diet. While permitting certain fresh fruit in certain quantities, we have had to be adamant against South African canned fruit. True, there are certain fruit-juices which are canned without the addition of any sugar, but the only water-canned whole fruit, free from additional sugar, is (as far as I know) produced outside the Union of South Africa.

Perhaps there are laws against canning fruit without sugar or sweetened synthetically; but if that is so, the law might be altered.

Just as the dairy industry could not satisfy our butter requirements without the help of margarine, so the sugar industry should realize that South Africa's need for real sugar is far too great for synthetic sweeteners ever to threaten our demand for the genuine article.

In the practice of medicine we are not, of course, concerned primarily with the sugar industry, but with our patients. Sugar is, in certain cases, far more dangerous than saccharine or some other synthetic sweetening substance. Just as we do not hesitate to recommend sugar or glucose when required, we must also be free to order sugar-free fruit, possibly flavoured synthetically. Certain patients, whose palates have not been cloyed by too much sweetness, spice or other stimulants, may be perfectly satisfied with canned fruit free from any sweetening, but no sugar-free canned fruit is likely to be obtainable.

Owing to our present sugar shortage, the canning industry will receive about 10,000 tons less sugar than the estimated requirements. This, they complain, will force them to can less fruit, much of which may be left to rot in the orchards. It seems a pity that there is so little that the individual can do against such waste, but readers of the *Journal* may be able to suggest a remedy.

R. Schweitzer, M.B., Ch.B.

P.O. Box 171,
Queenstown.
25 August 1952.

The Medical Association of South Africa : Die Mediese Vereniging van Suid-Afrika

AGENCY DEPARTMENT : AGENTSKAP-AFDELING

JOHANNESBURG

Medical House, 5 Esselen Street. Telephones 44-9134-5, 44-0817
Mediese Huis, Esselenstraat 5. Telefone 44-9134-5, 44-0817

ASSISTENTE/PLAASVERVANGERS VERLANG
ASSISTANTS/LOCUMS REQUIRED

(L/V256) Northern Transvaal. Locum required for September or October for solus practice. Terms: £2 10s. per day, all found. Own car not essential.
(L/V258) Southern Rhodesia. Locum required for two months —October and November, or November and December. Preferably doctor with G.P. experience and obstetrics.
(L/V263) Johannesburg. Locum required from 15 December till 16 January 1953, inclusive. Preferably gentile with some G.P. experience. Terms and allowances to be arranged.
(L/V269) Oos-Transvaalse dorp. Assistent verlang vir groot praktyk met spoorweg- en distriksgeneesheersaanstellings. Moet eie kar besit en so spoedig moontlik begin. Salaris £85 per maand, vry petrol en olie en losies. Definitiewe vooruitsigte tot vennootskap vir die regte persoon.
(L/V271) Oostelike Vrystaat. Plaasvervanger verlang vir 2 tot 3 maande, om so spoedig moontlik te begin. Salaris £2 12s. 6d. tot £3 3s. 0d. per dag, volgens ondervinding. Vry losies en inwoning en 8d. per myl as eie kar gebruik word.

PRAKTYKE TE KOOP : PRACTICES FOR SALE

(Pr/S34) Progressive Transvaal town dispensing practice, Average gross income £3,500 p.a. Excellent surgical facilities. Owner going overseas.
(Pr/S39) Pretoria practice. Gross annual income £3,200 to £3,500. Premium required £1,750. No house for sale. Full details on application.
(Pr/S43) Bloemfontein. Exceptionally well-established solus prescribing practice. Average annual receipts approx. £7,000. Premium required £4,250. Great deal of midwifery done. Practice offers great scope for practitioner with surgical ability.
(Pr/S46) O.F.S. dispensing practice. R.M.O. and M.O.H. appointments. Average monthly takings £260. House to let at £10 p.m. Premium required £1,000, which includes instruments, drugs and furniture. Cash is preferred, but terms could be discussed.
(Pr/S51) Transvaal hospital town dispensing practice. Gross income over £6,000 per annum. It is essential that this practice be worked by two men, one to be a surgeon. Premium required £3,500, and terms could be arranged. Practice can only be sold if house and surgery are bought for cash. Details on application.
(Pr/S48) Northern Rhodesia. Unopposed solus dispensing practice. Annual gross takings £5,000 (cash £3,500 and accounts £1,500). No bad debts, very little night work. Premium required £1,600. Drugs and furniture on valuation. Surgery buildings for sale or for hire. Will suit doctor who is not interested in city life.
(Pr/S52) Progressive Transvaal hospital town. Practice with excellent scope for expansion. Premium required £600 and terms could be arranged. Premium includes drugs, furniture and instruments valued at £160.
Pr/S54) Established branch practice in Johannesburg. Annual income £1,000. Premium required £500. Very much scope for expansion.
(Pr/S55) Well-established practice in northern suburbs of Johannesburg. Will suit an English-speaking doctor. Premium required £1,000. Full details on application.
(Pr/S56) An excellent practice on the O.F.S. Goldfields. Particularly fair terms will be arranged. Full details on application.

* * * *

DURBAN

112 Medical Centre, Field Street. Telephone 24049

PRACTICES FOR SALE : PRAKTYKE TE KOOP

(PD10) General practice, Natal inland city. European and non-European patients. Scope for midwifery and surgery. Premium required £1,250, cash preferred, but terms will be considered. For immediate sale.
(PD13) Natal Lower South Coast practice, near Pondoland border, suitable for retired doctor. Area developing and large Police holiday camp in vicinity. Excellent climate and very good fishing. Premium required £400, includes good stock of drugs and dressings, instruments and dispensary furniture. House for sale £1,800, including stand of one-third morgen. Bond available. For immediate sale. Owner having taken a full-time appointment.

LOCUM REQUIRED

Natal Midlands village. Month of November, £2 12s. 6d. per day, free board and lodging. Petrol and oil supplied. Single man preferred, but not essential. Mixed country general practice. No midwifery or major surgery. Hardly any night work. Dispensing of stock mixtures only. Native interpreter employed.

* * * *

KAAPSTAD : CAPE TOWN

Posbus 643, Telefoon 2-6177: P.O. Box 643, Telephone 2-6177

PRAKTYKE TE KOOP : PRACTICES FOR SALE

(1010) Cape Town. Nucleus of practice with excellent scope for expansion. Average annual receipts £1,100. Premium required, £850, which includes drugs, few instruments, half-share furniture. Consulting rooms shared with specialist.
(1016) Eastern Province. Unopposed solus practice. Average annual receipts £2,471. Premium for goodwill £1,000. Drugs, furniture and instruments offered at £190. Terms available. Attractive modern home to rent at £8 10s. p.m. Rental roomy surgery, £3 p.m.
(992) South-Eastern Cape hospital town. Premium required £1,500, which includes drugs, furniture and instruments worth approximately £1,350. Flat plus surgery to let at £6 p.m. Gross average annual cash takings, £2,500. Easy terms. Owner wishes to specialize.
(1101) Coastal City. Better-class general practice. Gross annual receipts £2,200. Premium required £1,750. Terms possible. Practice is expanding.
(1099) Eastern Province. Well-established unopposed practice. Three good appointments. House to let at nominal rental. Gross cash takings for year ending December 1951 were £3,668. Premium required, £2,150. Terms available. Excellent opportunity for English-speaking doctor.
(746) Large dispensing practice, mainly non-European. Average annual cash receipts approx. £5,200. £5,500 required for premium, drugs and surgery furniture. Details on application.
(895) Partnership share in practice of Specialist Physician. Details on application.
(1115) Cape Town suburban practice. Details on application.
(1132) East Griqualand. Highly lucrative unopposed practice comprising rich European farming area bounded by large native territory. D.S. appointment. Beautifully built large 7 roomed house on 3 erven. New Diesel lighting plant fully automatic generating 230 Volts. £4,500 required for house, lighting plant and goodwill.
(1133) Noord-Kaapland. Dorp met verpleeginrigting en goeie skool. Uitstekende praktyk met drie aanstellings. Inkomste jaar eindigende Junie 1952, £2,500. Spreekkamers te huur. Premie van £1,250 vir klandisiewaarde sluit in geneesmiddels, spreekkamermeubels, ens.

ASSISTANTE/PLAASVERVANGERS VERLANG
ASSISTANTS/LOCUMS REQUIRED

(1122) Eastern Province. From 13/12/52 to 21/1/53 for partnership practice.
(1123) Native Reserve. Assistant as soon as possible for 8 months. Own car not essential.
(1128) South Western Cape. An assistant as soon as possible, preferably Jewish. Good salary offered.
(1131) S.W.A. Mine Hospital. From approx. 3 to 23 November. £3 3s. 0d. per day, plus all found, plus travelling expenses.

Provincial Administration of the Cape of Good Hope

HOSPITALS DEPARTMENT

(Amended Advertisement)

1. Applications are invited for appointment to the post of Medical Practitioner, Grade C, with salary on the scale of £1,000 x 50—1,200 per annum on the fixed establishment of the Victoria Hospital, Lovedale.

2. In addition to the scale of salary indicated, cost of living allowance at rates prescribed from time to time by the Administrator is payable to whole-time officials and employees.

3. The conditions of service are prescribed in terms of the Hospital Board Service Ordinance No. 19 of 1941, as amended, and the regulations framed thereunder.

4. The duties attaching to the post are essentially the care of medical patients, but the successful applicant will be required to accept responsibility for the care of surgical cases should the Surgeon not be available.

5. The minimum requirements for the post are 5 years' practice since graduation, or which 3 must have been mainly in the practice of Medicine.

6. The successful candidate, if not already in the Hospital Board Service, will be required to submit satisfactory birth and health certificates.

7. Application must be made on the prescribed form Staff 23 which is obtainable from the Director of Hospital Services, P.O. Box 2060, Provincial Building, Wale Street, Cape Town, or from the Branch Representative of the Hospitals Department at Cape Town (P.O. Box 1487), East London (P.O. Box 13), Port Elizabeth (P.O. Box 80), Kimberley (P.O. Box 618) and Umtata (P.O. Box 202), or from the Medical Superintendent of any Provincial Hospital or Secretary of any School Board in the Cape Province.

8. The completed application forms must be addressed to the Medical Superintendent, Victoria Hospital, Lovedale, and must reach him not later than 4 October 1952. Candidates must state the earliest date on which they can assume duty.

Y267846

University of Queensland

Applications are invited for the position of Full-time Professor of Medicine within the Faculty of Medicine; salary £A3,000 p.a. plus cost of living allowance which is at present £A214 p.a.

Further particulars are obtainable from the Australian High Commissioner and Registrars of Universities of Capetown, Pretoria, South Africa, and Witwatersrand. Applications close with the undersigned on 30 November 1952.

C. Page Hanify,
Registrar.

48613

Professional Suite of Rooms

TO LET ON LEASE AT A REASONABLE RENTAL

We offer a professional suite of 6 rooms for immediate occupation. Accommodation comprises Waiting room, Receptionist's Office, 2 Consulting Rooms, 2 Surgeries, Toilet, in Paterson Park Mansions, Norwood, which is situated conveniently to most of the popular northern suburbs of Johannesburg. For further information, plans of rooms, etc., please telephone or write to Hopeful Estates, 45C Grant Avenue, Norwood, Johannesburg, 45-7131.

Wanted

Doctor or doctors required for the O.K. and C.T.C. Bazaars Sick Fund, Pretoria. For details of appointment apply to The District Manager, P.O. Box 1184, Pretoria.

Applications to be in not later than 27 September 1952.

This appointment has the approval of the Medical Association of South Africa.

Cape Provincial Administration

HOSPITAL DEPARTMENT

Applications are invited from registered medical practitioners for the undermentioned vacant posts.

Somerset Hospital—Honorary Medical Officer.

Cape Town Free Dispensary—Honorary Assistant Orthopaedic Surgeon.

The appointments will be for 5 years, but may be terminated before the end of that period if and when the medical staffing of the hospitals is reorganized.

Applications containing particulars of age, qualifications, experience, etc., with copies of recent testimonials should be forwarded to the Medical Superintendent of the Institution concerned not later than Tuesday, 30 September 1952.

Branch Office,
Hospitals Department,
58, Loop Street,
Cape Town.

36310

3 September 1952.

Dewetsdorp Munisipaliteit

VAKATURE

Aansoeke word hiermee ingewag om die pos van deeltydse Mediese Gesondheidsbeampte op 'n salarisskaal van £4 10s. per maand, lewenskostetoelae ingesluit, en moet die ondergetekende bereik voor of op 27 September 1952 om 3 nm.

Verdere besonderhede is op aanvraag verkrygbaar van die ondergetekende.

A. Hattingh
Stadsklerk

Dewetsdorp
4 September 1952

Rustenburg Platinum Mines Medical Benefit Society

PART-TIME MEDICAL OFFICER

Applications are invited from fully qualified registered general practitioners in respect of the above appointment.

Applications must reach the Secretary of the Society, P.O. Box 143, Rustenburg, by Friday, 31 October 1952.

Further particulars can be obtained from the Secretary.

Wanted

A panel of 4 doctors to act as Medical Officers to a Medical Aid Fund. Membership 100% Coloured. Areas and conditions can be obtained on application to The Secretary, Cape Town Municipal Workers' Association, Stegman Road, Claremont, C.P.

Wanted

Assistant in partnership practice of four in a pleasant town with all hospital facilities. An opportunity to gain all-round experience is assured. Salary £70 per month plus transport allowance. Reply, giving full particulars and date when available, to 'A. N. A.', P.O. Box 643, Cape Town.

Assistant Required

In Eastern Province coastal town assistant required as from the end of the year in a well established practice. Definite view to partnership. Commencing salary £90 per month. Write to 'A. N. B.', P.O. Box 643, Cape Town.

Benodig

Pligsgetroue assistent in praktyk met twee vennote. Vooruitsigte van vennootskap. Moet Afrikaanssprekend wees en motor besit. £2 10s. per dag, vry losies plus vervoer-toelae. Moet so gou moontlik begin. Skryf aan 'A. M. Y.', Posbus 643, Kaapstad.

Locum Benodig

Om een vennoot af te los vanaf begin Oktober vir 3 maande. £2 10s. per dag, vry losies plus reistoelae. Moet motor besit. Skryf aan 'A. M. Z.', Posbus 643, Kaapstad.

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